2.0 OPERATING PARAMETERS

The current parameters controlling the SW10 may be modified by the operator during SETUP mode. Some of them may be changed by the Host as shown in Figure 2-1.

CURRENT PARAMETERS

The parameter values currently defining terminal operations are stored in the terminal's main memory (RAM). These values may be changed by the operator at any time by entering SETUP mode. Some parameters have host commands, e.g., TABULATION CLEAR, AUTO REPEAT, AUTO WRAP, etc. The host computer may change these settings by issuing the corresponding command. Only the current parameters will be affected by a host command. The current parameters are temporary in that they are maintained only as long as power remains on the terminal.

PERMANENT PARAMETERS

The permanent parameter values are stored in non-volatile memory (NVM) and are loaded into the current parameter area (RAM) at power on time. To change the permanent parameters, the desired contents are selected in the current parameter area during SETUP time, and then may be written into the permanent parameter area using the SAVE (<SHIFT><S>) command. The host computer cannot alter the permanent parameter area; only the operator may store information into the permanent area during SETUP time.

DEFAULT PARAMETERS

The default parameters are those stored in NVM at the time of manufacture. The default condition of each parameter is underlined in Figure 2-1. These conditions will be automatically written into NVM if an NVM error occurs or if <SHIFT><D> is pressed while in SETUP mode. The default condition for the TAB SET is column 9 and every eighth column after that, i.e., column 17, 25, 33, 41, etc.

2.1 SETUP MODE

The operator may place the terminal into SETUP mode by pressing the <SETUP> key. While the terminal is in SETUP mode, the data area of the screen will freeze, and the status line will be used for displaying SETUP information. Incoming data will be stored in an internal buffer and XOFF will be sent to the host computer if enabled and needed. Upon entering SETUP mode, line 25 will display a summary of

SETUP COMMANDS

<SHIFT><A>	-	Set Answerback
<SHIFT><C>	-	Change a setting
<SHIFT><D>	-	Load default parameters
<SHIFT><I>	-	Initialize
<SHIFT><M>	-	Display current settings
<SHIFT><R>	-	Recall permanent settings
<SHIFT><S>	-	Store current settings away as permanent settings in NVM
<SHIFT><T>	-	Display current tab settings
<SHIFT><V>	-	Display Rev Level
<SHIFT> & <NO SCROLL>	-	Program Function Key

PARAMETER	SETTINGS	OPERATOR SETTABLE	HOST SETTABLE
MODE	ONLINE/LOCAL	YES	NO
BAUD	50 THRU 9600	YES	NO
PARITY	SPC/MRK/EVN/ODD	YES	NO
MODE	VT100/VT52/PROG	YES	YES
AUTO NEW LINE	ON/OFF	YES	YES
AUTO WRAP	ON/OFF	YES	YES
LINE END	STD/DEC	YES	NO
CURSOR BLINK	ON/OFF	YES	NO
CAPS LOCK	ON/OFF	YES	NO
MARGIN BELL	ON/OFF	YES	NO
SHIFT 3	#/ENGLISH POUND	YES	NO
POWER FREQUENCY	50/60 HERTZ	YES	NO
PRINTER BUSY	LOW/HIGH	YES	NO
KEYBOARD	1 / 2	YES	NO
PASSTHRU	ONLY/DISPLAY	YES	NO
AUTO REPEAT	ON/OFF	YES	YES
PROTECTED PRINT	ON/OFF	YES	NO
AUTO XON	ENABLE/DISABLE	YES	NO
LOCAL ECHO	ON/OFF	YES	NO
KEY CLICK	ON/OFF	YES	NO
SLOW SCROLL	ON/OFF	YES	YES
REVERSE VIDEO	ON/OFF	YES	YES
BRIGHTNESS	1 THRU 16 (8)	YES	NO
KEYPAD APPLICATION MODE		NO	YES
CURSOR KEY MODE		NO	YES
ORIGIN MODE		NO	YES
TAB FORMAT	1-80 COLUMNS	YES	YES
ANSWERBACK	1-20 CHARACTERS	YES	NO

Figure 2-1. Parameter List

the SETUP commands. The status line will look like this:

```
Setup: space/bksp:next C:change S:save
       R:recall I:init T:tab A:ans
```

Entering SETUP mode and changing parameters will not change the data displayed on the screen except for <SHIFT><M>, which will overwrite existing screen data to show current parameter settings. This allows the operator to enter SETUP mode at any time, even during online data entry, without affecting the data on the screen or disturbing the host computer. After exiting SETUP mode, the operator may continue with the previous operation.

SELECTING SETUP PARAMETERS

The SETUP parameters are kept in an internal list. The operator selects the parameter by stepping through this list, using the <SPACE> key or <BACKSPACE> key. Each time the <SPACE> or <BACKSPACE> key is pressed, the next or previous parameter and its setting is displayed on line 25. When the end of the list is reached, line 25 will return to the initial display. Figure 2-1 is a list of the SETUP mode parameters and their range of settings in the sequence they will be displayed on line 25.

CHANGING A SETUP PARAMETER

When the appropriate parameter is displayed on the status line, its current value may be changed by pressing the <SHIFT> and <C> key. Each time, the parameter will be toggled through its range of settings, one at a time. If the end of a range is reached, the setting is cycled back to the start of its range. For example: when brightness is displayed on the status line, pressing a <SHIFT><C> will cause the brightness setting to display values from 1 through 16. When the value 16 is reached, the next depression of <SHIFT><C> will cause a value of 1.

The terminal parameters entered in this manner are stored away as current terminal parameters. They will remain in effect until power is removed from the terminal or modified again during SETUP by the operator or Host.

SAVING SETUP PARAMETERS

To store away any changes made during SETUP mode, press <SHIFT><S> while still in SETUP mode. This causes the current parameters in RAM to be stored away as permanent parameters in NVM.

EXAMPLE: change baud rate from 9600 to 300 and save the new baud rate.

1. press <SETUP>
   enters SETUP mode;
2. press <SPACE BAR> 2 times
   this advances setup to the baud rate parameter;
3. press <SHIFT><C> 7 times
   baud rate will step thru its range to 300;
4. press <SHIFT><S>
   status line will display "setup: saving" for a moment, then return to displaying the baud rate.

A baud rate of 300 has now been saved in the NVM.

RECALLING SETUP PARAMETERS

To recall the permanent parameters while in SETUP mode, press the <SHIFT> and <R> keys.

INITIALIZING TERMINAL

During SETUP mode, the SW10 may be reset by pressing the <SHIFT> and <I> keys. This will cause the terminal to act as if its power had been cycled off and back on again. The internal diagnostic will again check out RAM and ROM and then sound a beep to signify testing is completed and the permanent parameters have been loaded.

SETTING/RESETTING TABS

To set or reset tabs while in SETUP mode, press the <SHIFT> and <T> keys. The display on line 25 will contain the sequence <1234567890> eight times to represent the terminal columns 1 thru 80, and current tab stop settings will be indicated by an asterisk instead of a number in each column. The cursor will start in column 1 and be displayed as reverse video. To set or reset a tab at any specific column, move the cursor to the desired column by pressing

<SPACE> to move the cursor forward or <BACKSPACE> to move it backwards. When the cursor is in the desired column, pressing the <SHIFT> and <C> keys will toggle the tab setting in that column.

The default condition for the TAB SET is column 9 and every eighth column after that, i.e., column 17, 25, 33, 41, etc.

To clear or reset all the tabs with a single operation, press the <SHIFT> and <A> keys.

To exit the tab sequence, press the <SETUP> key. Line 25 will be restored to the initial SETUP display. Permanent storage of these tab settings may be accomplished in SETUP mode by pressing <SHIFT> and <S>.

SETTING ANSWERBACK MESSAGE

The SW10 answerback feature provides the terminal with the capability to identify itself to the Host. The entire answerback sequence takes place automatically without affecting the screen or requiring operator action. An ENQuire command (hex 05) from the host computer causes the terminal to send to the host computer the answerback message as currently stored in RAM.

The answerback message may be changed in SETUP mode by pressing <SHIFT><A>. Line 25 will display "A=" and a solid cursor.

Enter a single character that will not be used in the answerback message. This character will be used as a delimiter to start and terminate the message and will NOT be stored away as part of the message. After entering the delimiter character, enter the answerback message itself. The message may be up to 20 characters long and may include control characters. Any control characters entered will be displayed on the status line as reverse video. If 20 characters are entered, the answerback sequence will automatically terminate itself and store the message as entered. If the message is less than 20 characters long, type the delimiter character that was used to start the message. This character will NOT be stored and will only serve to terminate the entry sequence and cause the entered message to be stored.

Example: Set the ANSWERBACK message for GENERAL TERMINAL:

1. press <SETUP>
   enter SETUP mode;
2. press <SHIFT><A>
   select ANSWERBACK parameter;
3. press <.>
   a period will be used as the delimeter;
4. enter GENERAL TERMINAL
   this will be the answerback message;
5. press <.> this is the closing delimiter.

Once the sequence is terminated the message is stored in the current parameter area and line 25 is restored to its previous SETUP mode display. To save the message permanently use the SAVE operation (<SHIFT><S>).

DISPLAYING THE REV LEVEL

Simultaneously pressing <SHIFT><V> will cause the firmware revision level to be displayed on the status line. The format will be "REV 940053-032". Pressing <SHIFT><V> again will clear the status line and return the terminal to SETUP mode.

EXITING SETUP MODE

To exit SETUP mode, press the <SETUP> key. The terminal will return to its operating mode and line 25 will be restored to display terminal status messages.

2.2 SETUP FEATURE DEFINITIONS

This section describes each SETUP feature in detail and states how each feature affects the terminal.

MODE ONLINE/LOCAL

Line/Local allows the operator to place the terminal in an online or a local (offline) condition. When the terminal is online, the message "online" is displayed on the status line and all characters typed on the keyboard are sent directly to the computer. Messages from the computer are displayed on the screen. In the local condition, the status line displays "local" and the terminal is electrically disconnected from the computer,

3.0 PROGRAMMING

This section describes how the SW10 responds to command sequences. The command sequences may have been generated directly by the host computer, they may have been echoed back as a result of key depressions from the keyboard, or they may have been generated by the operator from the keyboard in an offline condition. It is important to note that when the terminal is online, no local action will occur due to operator keystroke commands, but rather by the terminal receiving the echoed command from the host computer.

3.1 CONVENTIONS

When reading the following command descriptions, these conventions should be noted:

a. The ASCII code chart is presented in Figure 3-1.
b. The following command sequences do NOT contain any embedded spaces; spaces are inserted to improve visual clarity only.
c. Ps refers to a selective parameter used to identify the command further.
d. Pn refers to a numeric parameter used to quantify the command further.
e. Fn refers to the function identifier.
f. The word *SETUP* in the left corner indicates that this operation may also be selected or modified during SETUP mode.
g. Not all command sequences are executed by the terminal when they are entered from the keyboard but must be echoed back from the host computer. If the terminal is being used off-line, LOCAL ECHO should be ON.

3.2 COMMAND FORMAT

The SW10 recognizes command sequences as specified in the ANSI 3.64 standard. The command format is:

```
        ESC  [  Pn  Fn
         :   :   :   :
         :   :   :   :
ESCAPE...:   :   :   :...Function identifier
Left bracket..:  :.......Parameter
```

ESCAPE (hex 1B) initiates the command sequence. Left Bracket (hex 5B) indicates a standard ANSI format.

Pn represents a numerical modifier (in decimal) often indicating how many times a command is to be repeated. It may also further define the effect of Fn. If no value is given, a default value of 0 or 1 is used, whichever is appropriate.

Fn is a character which indicates what function is to be performed.

This format covers most of the commands. Some commands, e.g., cursor positioning, requires two numeric parameters. The same format is followed but the numeric parameters are separated with a semicolon. For example, a command to move the cursor to line 4, column 4 would be:

ESC [4 ; 4 H

3.3 ANSI COMMAND SEQUENCES

ANSI/VT-52 MODE

SETUP	VT100 TO VT52	ESC [? 2 1
	VT52 TO VT100	ESC <

If in VT100 mode, the terminal can be changed to VT52 mode by ESC[?21. In VT52 modes, the VT100 command sequences as listed in Section 3.3 cannot be executed; only commands listed in Section 3.4 may be executed. To return to VT100 mode from VT52 mode, use the command ESC<.

AUTO REPEAT MODE

SETUP	(ON)	ESC [? 8 h
	(OFF)	ESC [? 8 l

This command sequence controls the automatic repeating of certain keys when they are depressed for more than .5 seconds. When AUTO REPEAT MODE is ON, the keys will automatically repeat. When AUTO REPEAT MODE is OFF the keys will not automatically repeat.

AUTOWRAP MODE

SETUP	(ON)	ESC [? 7 h
	(OFF)	ESC [? 7 l

This command sequence controls character entry in column 80. When AUTOWRAP MODE is OFF, the cursor in column 80 will overlay succeeding

characters until a direct command is received to move the cursor. When AUTOWRAP is ON, the cursor ,upon reaching column 80, will automatically go to the first position of the next line when the next character is received. A scroll will take place if appropriate.

BAUD RATE SELECT

SETUP ESC [> 0 Ps

The terminal baud rate can be set from the host by the sequence ESC [> 0 Ps where Ps is a baud rate identifier.

Ps	BAUD RATE	Ps	BAUD RATE
@	50 Baud	G	600 Baud
A	75 Baud	H	1200 Baud
B	110 Baud	I	2000 Baud
C	134.5 Baud	J	2400 Baud
D	150 Baud	K	4800 Baud
E	200 Baud	L	9600 Baud
F	300 Baud		

Example: ESC [> 0 H will set the baud rate to 1200.

CURSOR BACKWARD

ESC [Pn D

This command sequence moves the active cursor position to the left. The distance moved is determined by the parameter Pn. If Pn is missing or equal to 0 or 1 the active position moves one position to the left. A parameter value of x moves the active position x positions to the left. An attempt to move the cursor beyond the left margin will result in the cursor stopping at the left margin, i.e., column 1.

Example: ESC [4 D will move the cursor back four spaces.

CURSOR DOWN

ESC [Pn B

This command sequence moves the active cursor position downward within the same column position. If Pn is missing or equal to 0 or 1 the active position moves down one line. A parameter value of x moves the active position x lines down. An attempt to move the cursor below the bottom margin will result in the cursor stopping in the bottom margin line.

Example: ESC [6 B will move the cursor down 6 lines.

CURSOR FORWARD

ESC [Pn C

This command sequence moves the active cursor position Pn locations to the right. If Pn is missing or equal to 0 or 1 the cursor will move one position to the right. A Pn value of x will move the cursor x positions to the right. An attempt to move the cursor beyond the right margin will cause the cursor to stop in the right margin, i.e., column 80.

Example: ESC [3 C will advance the cursor 3 spaces.

CURSOR KEY MODE

(ON) ESC [? 1 h
(OFF) ESC [? 1 l

This command sequence selects which characters are sent when the four cursor arrow keys are pressed. When CURSOR KEY MODE is ON, the four cursor arrow keys will send application dependent sequences. When CURSOR KEY MODE is OFF, the four arrow keys will send ANSI cursor control commands. The actual characters sent are shown in Figure 1-8.

CURSOR POSITION DIRECT

ESC [Pn ; Pn H

This command sequence moves the active cursor position to the location specified by the two Pn parameters. The first parameter value (Pn) identifies which line, the second parameter value (Pn) identifies which column is to contain the active cursor. If Pn is not specified or is equal to 0, a default value of 1 will be used.

Example: ESC [10 ; 20 H will position the cursor in line 10, column 20.

CURSOR POSITION REPORT

ESC [6 n

This command sequence, causes the terminal to send its active cursor position to the host

computer. The character sequence sent to the host computer by the terminal is:

ESC [Pn ; Pn R

The first Pn will be a decimal value representing the line number and the second Pn will be a decimal value representing the column number.

CURSOR UP

ESC [Pn A

This command sequence moves the active cursor position upward the number of lines specified by the value of Pn. The column position is not affected. If Pn is missing or equal to 0 or 1 the cursor will move up one line. A Pn value of x will move the cursor up x lines. An attempt to move the cursor above the top margin will cause the cursor to stop in the top margin line.

Example: ESC [5 A will move the cursor up 5 lines.

DELETE CHARACTER

ESC [Pn P

This command sequence causes characters to be deleted from the current line starting with the character at the cursor. If Pn is omitted or equal to 0 or 1, the character at the active cursor position is deleted. Pn equal to x deletes x characters to the right of the cursor counting the cursor. The effect of this command is limited to the current line.

Example: ESC [4 P will delete the character at the cursor position plus the next 3 characters.

DELETE LINE

ESC [Pn M

This command sequence causes the number of lines specified by the parameter Pn to be deleted. If Pn is missing or equal to 0 or 1, only the line containing the active cursor position is deleted. If Pn is equal to x, x lines will be deleted. Lines from below will move up within the region allowing this command to be used above, in, or below the scrolling region. As lines move up, new blank lines appear at the bottom of the region.

Example: ESC [3 M will delete the current line plus the next two lines.

DEVICE ATTRIBUTES

ESC [0 c

This command sequence will cause the terminal to transmit its attributes to the host computer. The SW10 will transmit the following fixed response:

ESC [? 1 ; 0 c

DEVICE STATUS REPORT

ESC [5 n

This command sequence allows the Host to request terminal status. The terminal will respond with either:

RESPONSE	MEANING
ESC [0 n	Terminal OK and ready
ESC [3 n	Terminal not OK

ERASE IN DISPLAY

ESC [Ps J

This command sequence causes specific characters to be erased from the screen display according to the value of the parameter Ps. In each case, the active cursor position does not change. If no number is entered, it is assumed to be 0.

- Ps=0 Erase all characters from the active cursor up to and including the last position of the screen.
- Ps=1 Erase all characters from the start of the screen up to and including the active cursor position.
- Ps=2 Erase all of display.

ERASE IN LINE

ESC [Ps K

This command sequence causes specific characters to be erased from the current line according to the value of the parameter Ps. In each case, the active cursor position does not change. If no number is entered, it is assumed to be 0.

Ps=0 Erase all characters from the active cursor to end of line.
Ps=1 Erase all characters from the beginning of the line up to and including the active cursor positions.
Ps=2 Erase the entire line.

FUNCTION KEY CALL

ESC [< Ps

This command sequence allows a programmed function to be "called", ie., remotely pressed, from the host computer or another function key. When this sequence is executed by the terminal, the appropriate function key will respond just as if it had been pressed by an operator. The Ps character identifies the function key to be pressed as follows:

Ps	Function Key	Ps	Function Key
a	F1	g	F7
b	F2	h	F8
c	F3	i	F9
d	F4	j	F10
e	F5	k	F11
f	F6	l	F12

Example: ESC [< d will display or execute the program stored in function key F4.

If function key B is called by function key A, terminal operation will be returned to A after B is executed. However, if function key B is called by the Host, terminal activity will end after B has been executed. In other words, if the key is called locally, the called key routine will be treated as a subroutine. If called by the Host, the key will be treated as a "branch to" routine.

FUNCTION KEY PROGRAMMING

SETUP ESC [> Ps /text/

On power up, the function keys are loaded to the default values shown in Figure 1-7. Each unshifted function key may be loaded with up to a 20 character message. The sequence starts with ESC [followed by the key identifier selected from the chart below.

The next character received will be a delimiter, and may be any character not used within the text. A slash character (/) is often used. The delimiter is not stored away, and does not count as part of the 20 character limit. The characters received after the delimiter will be stored into the function key. After the 20th character is received, the sequence will automatically terminate with any excess (over 20) characters treated as a normal data stream. If less than 20 characters are loaded, a delimiter character should be sent to terminate the sequence.

Ps	Function Key	Ps	Function Key
a	F1	g	F7
b	F2	h	F8
c	F3	i	F9
d	F4	j	F10
e	F5	k	F11
f	F6	l	F12

Function keys may be nested, i.e., one key may call another key by entering an ASCII US code, <CTRL><DEL>, followed by the key to be called. For example, US b loaded into F1 would call F2 as part of the F1 sequence. A maximum of five function keys may be nested.

A temporary delay to allow for asynchronous operations may also be loaded into a function key by entering US @. This will cause a one second delay (1.2 sec at 50Hz) each time it is encountered within a function key.

ASCII US followed by "a" thru "l" = call another function key

ASCII US followed by @ = one second delay

ASCII US followed by a second ASCII US will send the second ASCII US.

The function keys may be loaded with commands that alter terminal operations. For example:

<US>0 = Toggles LINE/LOCAL state.

<US>1 = Stops data from being routed to the screen when in PRINTER CONTROLLER mode.

<US>2 = Allows data to be routed to the screen when in PRINTER CONTROLLER mode.

NOTE: Not all command sequences are executed by the terminal when they are entered from the keyboard but must be echoed back from the host

computer. If the terminal is being used off-line, LOCAL ECHO should be ON.

Function Key loading from keyboard:

NOTE: Only <F1> thru <F8> may be loaded in the following manner. <F9> thru <F12> must be loaded using escape sequences.

1. Enter SETUP mode by pressing <SETUP> key.
2. Simultaneously press<SHIFT><NO SCROLL>. The status line will now show "load key = ?".
3. Press the function key which is to be programmed, <F1> thru <F8>. The key identifier will be entered on the status line.
4. Press a delimiter key which may be any key not used within the text itself. The slash character (/) is often used. The status line will now show an area 20 spaces long between the delimiters.
5. Enter the desired message. The sequence will automatically end when the 20th character is entered. If less than 20 characters are entered, press the delimiter key to terminate the message. Exit to SETUP will be automatic.
6. If an error was made while entering the text, the cursor left (<—) may be used to perform a backspace function allowing the operator to correct entry errors. The BACKSPACE key may not be used.

HORIZONTAL TABULATION SET

SETUP ESC H

This command sequence causes a Tab stop to be set in the active cursor column.

HORIZONTAL AND VERTICAL POSITION

ESC [Pn ; Pn f

This command sequence moves the active cursor position to the location specified by the two Pn parameters. The first parameter value (Pn) identifies which line, the second parameter value (Pn) identifies which column is to contain the active cursor. If Pn is not specified or is equal to 0, a default of 1 will be used.

Example: ESC [12 ; 26 f will position the cursor to line 12, row 26.

If the line number is larger than 24, the cursor will stop on line 24; if the column number is larger than 80, the cursor will stop in column 80.

INDEX

ESC I

This command sequence causes the active cursor position to move down one line without changing the column position. If the active cursor position is in the bottom margin line, a scroll up is performed.

INSERT LINE

ESC [Pn L

This command sequence causes the number of blank lines specified by Pn to be inserted. If Pn is missing or equal to 0 or 1, one blank line will be inserted. Pn equal to x will insert x lines. New lines are placed starting at the active cursor line, and existing lines are shifted down, bounded by the bottom margin line of the region. This allows usage above, in, or below the scrolling region.

Example: Esc [3 L will shift the current line down 4 lines and insert 3 blank lines.

INSERT/REPLACEMENT MODE

(Insert) ESC [4 h
(Replacement) ESC [4 l

This command sequence affects incoming character display. When Replacement mode is selected (Insert mode reset), each incoming character will overlay the existing character at the active cursor position. When Insert mode is set, each incoming character causes all characters from the cursor to column 80 to shift right one position. The incoming character is then entered at the active cursor position. Any characters which are forced off the end of the line are lost.

INVOKE CONFIDENCE TEST

ESC [2 ; Ps y

This command sequence causes internal tests to be started and also allows automatic repeating of those tests. The parameter Ps identifies which test is to be run. For multiple operations Ps is calculated by adding, e.g.,

run both test 1 and 2 is Ps value of 3 (1+2=3), auto repeat test 2 is Ps 10 (2+8=10), etc.

Ps=1	Power up self test - ROM, RAM, NVM and keyboard
Ps=2	Data Loop Back (requires loop back connector)
Ps=8	Repeat selected test until failure or power off

KEYPAD APPLICATION MODE

ESC =

This command sequence causes application dependent sequences to be sent to the host computer when keys on the numeric keypad are pressed. This command does not affect the numeric keys in the main keyboard. The actual characters sent are shown in Figure 1-6.

KEYPAD NUMERIC MODE

ESC >

This command sequence resets KEYPAD APPLICATION MODE and allows the numeric keypad keys to send their normal ANSI 3.64 codes as shown in Figure 1-6.

LOAD INDICATOR

ESC [Ps q

This command sequence sets and resets the four indicators on the status line according to the value of Ps.

Ps=0	Turn off indicator 1 thru 4
Ps=1	Turn on indicator 1
Ps=2	Turn on indicator 2
Ps=3	Turn on indicator 3
Ps=4	Turn on indicator 4

If no Ps parameter is present, a value of 0 will be assumed.

NEXT LINE

ESC E

This command sequence causes the active cursor position to move to column 1 of the next line. If the active cursor position is in the bottom margin line, a scroll up is performed.

ORIGIN MODE

(ON)	ESC [? 6 h
(OFF)	ESC [? 6 l

This command sequence defines the location of line 1, column 1 on the screen when split screen scrolling margins are active. Line and column numbers are relative to the screen. When ORIGIN MODE is OFF, the line 1/column 1 location is the upper left character position on the screen. The cursor may be positioned outside the top or bottom margins with a CURSOR POSITION DIRECT command. When ORIGIN MODE is ON, the line 1/column 1 location is the upper left character position within the margins. Line and column numbers are therefore relative to the current margin settings. The cursor cannot be positioned outside the top or bottom margins.

PAGE EXTENT

SCREEN	ESC [19 h
SCROLL REGION	ESC [19 l

This sequence is used in conjunction with the PRINT PAGE and PAGE SEND commands. It determines what portion of the page will be transmitted when either of the PRINT/SEND commands is executed. If ESC [19 l is selected, only the scrolling region of the display will be sent. This allows the operator to send only the active data area of a split screen display and not send the headings and/or footings. If ESC [19 h is entered, no split screen boundaries will be recognized and the entire display will be sent.

PAGE SEND

ESC [2 F
ESC [2 i

This command sequence causes the contents of the screen to be sent to the host computer. This command is identical to the PRINT PAGE command except that data is sent out the MAIN PORT instead of the PRINTER PORT.

PRINTER CONTROLLER ENABLE

ESC [5 F
ESC [5 i

This command sequence turns the printer port on. All data received will be routed to the printer port. The data may or may not be

displayed on the screen depending on the PASSTHRU DISPLAY/ONLY selection. (See Section 2.2).

PRINTER CONTROLLER DISABLE

ESC X
ESC [4 F
ESC [4 i

This command sequence will reset PRINT CONTROLLER ENABLE.

PRINT PAGE

ESC [F
ESC [i

This command sequence directs the contents of the screen to the printer port. If PROTECTED PRINT is OFF, all screen data will be sent to the printer port. If PROTECTED PRINT is ON, full intensity data will be sent to the printer port with any half intensity (or reverse video) data sent as spaces. A Carriage Return and Line Feed (CR/LF) along with a 250 millisecond delay will automatically occur at the end of each line. While the screen data is being sent to the printer port, any new data received from the host will back up in the receive buffer FIFO. If XON/XOFF is enabled, XOFF will be sent prior to overflow. The PRINT PAGE function may be performed from the keyboard by the key combinations <SHIFT><ENTER>. No command sequence will be sent to the host.

REPORT TERMINAL PARAMETERS

ESC [<sol>;<par>;<nbits>;<xpeed>;
<rspeed>;<clkmul>;<flags> x

This data sequence is sent to the host computer by the SW10 in response to a REQUEST TERMINAL PARAMETERS command. This report is inhibited on power-up or reset. See REQUEST TERMINAL PARAMETERS command. The values for the various parameters are:

<sol>	= 2	This message is a report
<sol>	= 3	This message is a report and the terminal is only reporting on request
<par>	= 1	No parity set
<par>	= 4	Parity is set to ODD
<par>	= 5	Parity is set to EVEN
<nbits>	= 1	8 bits per character
<nbits>	= 2	7 bits per character
<xspeed>	= 0	50 baud
and	= 8	75 baud
<rspeed>	= 16	110 baud
	= 24	134.5 baud
	= 32	150 baud
	= 40	200 baud
	= 48	300 baud
	= 56	600 baud
	= 64	1200 baud
	= 80	2000 baud
	= 88	2400 baud
	=104	4800 baud
	=112	9600 baud
<clkmul>	= 1	Bit rate multiplier is 16
<flags>	= 0	No STP option

Example: ESC [3; 4; 1; 112; 112; 1; 0 x will set the terminal to report the terminal parameters, ODD parity, 8 bit word size, 9600 baud, transmit and receive speed.

REQUEST TERMINAL PARAMETERS

ESC [Ps x

This command sequence causes the REPORT TERMINAL PARAMETERS message to be sent to the host computer. Ps indicates whether future reports may be made at the terminal's discretion.

Ps = 1 This message is a request for status and from now on the terminal may report ONLY in response to a request. Causes <sol> = 3 in the REPORT TERMINAL PARAMETER message.

Example: ESC [0 x will return the following messages: ESC [3; 4; 1; 112; 112; 1 0 x

RESET MODES

ESC [? Ps;Ps;..;Ps l

This command sequence allows one or more SW10 terminal modes to be reset. Each mode to be reset is individually specified as a parameter (Ps) separated from any other parameters by a semicolon. The command sequence terminates with a lower case l. The mode identifiers (numbers) are listed under the SET MODE command.

Example: ESC [? 1; 4; 8 l will reset modes 1, 4, and 8, turning off Cursor Key mode, Slow Scroll mode, and Auto Repeat mode.

RESET TO INITIAL STATE

SETUP ESC c

This command sequence causes the SW10 to perform a complete reset as if it had been powered off and then back on. The parameters stored in NVM (during SETUP mode) will become the active parameters.

RESTORE CURSOR

ESC 8

This command sequence causes the previously save cursor position, video attributes, and character set to be restored. See SAVE CURSOR.

REVERSE INDEX

ESC M

This command sequence causes the active cursor position to move one line up without changing the column position. If the active cursor position is in the top margin line, a scroll down is performed.

SAVE CURSOR

ESC 7

This command sequence causes the cursor position, video attributes, and character set to be saved. See SELECT CHARACTER SET and RESTORE CURSOR.

SCREEN MODE

SETUP	Reverse Video	(ON)	ESC [? 5 h
	Reverse Video	(OFF)	ESC [? 5 l

This command sequence controls the visual background of the screen display. When SCREEN MODE is ON, the screen will display characters as dark dots on a light green background. When SCREEN MODE is OFF, characters are displayed as light green dots on a dark background.

SCROLLING SLOW MODE

SETUP	(ON)	ESC [? 4 h
	(OFF)	ESC [? 4 l

This command sequence controls the speed at which new lines of data appear on the screen. When SCROLLING SLOW MODE is ON, new lines will appear at a maximum rate of 2 lines per second independent of the baud rate setting. XON/XOFF will be sent if applicable and enabled. This allows the operator to easily read information as it scrolls onto the screen. When SCROLLING MODE is OFF, new lines will appear at a maximum rate as determined by the baud rate setting. At high baud rates, the data may be difficult to read as it is scrolling onto the screen.

SELECT CHARACTER SET

ESC <sequence>

This command sequence allows selection between different displayable character sets. When the terminal is first powered up, the ASCII set is assigned to both G0 and G1 sets. The following example shows how the character sets may be changed.

Example: Esc (A and ESC) 0 will assign the UK set to G0 and the special graphics set to G1.

Alternately pressing <CTRL><O> and <CTRL><N> will switch between the UK set and special graphics with <CTRL><O> selecting G0 and <CTRL><N> selecting G1.

<CTRL><O> G0 set	<CTRL><N> G1 set	
ESC (A	ESC) A	UK set
ESC (B	ESC) B	ASCII set
ESC (0	ESC) 0	Special Graphics

SELECT GRAPHIC RENDITION

ESC [Ps m

This command sequence controls the visual attributes of the displayed character. The value of Ps determines the attribute of those characters, i.e., half intensity on reverse video. Instead of Half Intensity, a hardware jumper allows Reverse Video to be selected. See Appendix B.

Ps=0	Full Intensity
Ps=1	Half Intensity/Reverse
Ps=4	Half Intensity/Reverse
Ps=7	Half Intensity/Reverse

All other parameters are ignored.

SET MODE

ESC [? Ps;Ps;...;Ps h

This command sequence allows one or more SW10 terminal modes to be set. Each mode to be set

is individually specified as a parameter (Ps) separated from any other parameters by a semicolon. The command sequence terminates with a lower case h.

Ps	Meaning
0	ignored
1	Cursor Key Mode
2	VT100/VT52 Mode
3	ignored
4	Scrolling slow
5	Screen mode
6	Origin mode
7	Auto Wrap mode
8	Auto Repeat mode
9	ignored

Example: ESC [? 1; 4; 8h will put the terminal in Cursor Key mode, turn Slow Scroll on, and enable the Auto Repeat mode.

In SET mode, the following commands can be used to change the function of LINEFEED key:

ESC [20 h	LINEFEED and CARRIAGE RETURN
ESC [20 l	LINEFEED only

TABULATION CLEAR

SETUP ESC [Ps g

This command sequence resets tab stops according to the value of the parameter (Ps).

Ps=0	Clear only the tab stop at the active cursor location.
Ps=3	Clear all tab stops on screen.

TOP/BOTTOM MARGIN SET

ESC [Pn ; Pn r

This command sequence sets the top and bottom margins to define which contiguous screen lines will scroll. The first parameter (Pn) is the top line of the scrolling region. The second parameter (Pn) is the bottom line of the scrolling region. Lines located above the top scrolling margin and lines located below the bottom scrolling margin will remain fixed (do not move) on the screen. If no parameters are present, the entire screen will scroll.

Example: ESC [10; 20 r will set the top margin at line 10 and the bottom margin at line 20.

TRANSMIT CHARACTER AT CURSOR

ESC 5

This command sequence causes the character at the active cursor position to be transmitted to the host computer. By positioning the cursor, any location on the screen may be transmitted to the host.

3.4 VT-52 COMMAND CODES

The following command sequences will be recognized when the terminal is in VT-52 Mode. ANSI 3.64 command sequences will not be recognized in this mode.

CURSOR DOWN

ESC B

This command sequence moves the active cursor position down one position without altering the horizontal position. If an attempt is made to move the cursor below the bottom margin, the cursor stops at the bottom margin.

CURSOR LEFT

ESC D

This command sequence moves the active cursor position one position to the left. If an attempt is made to move the cursor to the left of the left margin, the cursor stops at the left margin.

CURSOR RIGHT

ESC C

This command sequence moves the active cursor position one position to the right. If an attempt is made to move the cursor to the right of the right margin, the cursor stops at the right margin.

CURSOR UP

ESC A

This command sequence moves the active cursor position up one position without altering the horizontal position. If an attempt is made to move the cursor above the top margin, the cursor stops at the top margin.

CURSOR TO HOME

ESC H

This command sequence moves the cursor to the home position.

DIRECT CURSOR ADDRESS

ESC Y <L><C>

Move the cursor to the specified line <L> and column <C>. The line and column numbers are sent as ASCII codes whose values are the desired line or column number plus octal 037, e.g., an octal value of 040 refers to the first line or column, an octal value of 050 refers to the eighth line or column, etc.

ENTER ALTERNATE KEYPAD MODE

ESC =

The optional auxiliary keypad keys will send unique identifiable escape sequences for use by applications programs instead of the legends engraved on the keycap. The actual characters sent are shown in Figure 1-6.

ENTER ANSI MODE

SETUP	VT52 to VT100	ESC <
	VT100 to VT52	ESC [? 2 l

When in VT52 mode, the command sequence ESC < causes the terminal to enter VT100 mode. The commands listed in section 3.4 will no longer be recognized. The command sequences in Section 3.3 will then be executable. All subsequent escape sequences will be interpreted according to ANSI Standards X3.64-1977 and X3.41-1974.

ENTER GRAPHICS MODE

ESC F

This command sequence causes the special line drawing character set to be used by the SW10.

ERASE TO END OF LINE

ESC K

This command sequence causes all characters from the active cursor position to the end of the current line to be erased. The active cursor position is not changed.

ERASE TO END OF SCREEN

ESC J

This command sequence causes all characters from the active cursor position to the end of the screen to be erased. The active cursor position is not changed.

EXIT ALTERNATE KEYPAD MODE

ESC >

This command sequence causes numeric keypad keys to send the ASCII codes for the characters engraved on the key. This is normal operating mode.

EXIT GRAPHICS MODE

ESC G

This command sequence causes the standard ASCII character set to be used.

IDENTIFY

ESC Z

This sequence causes the terminal to send its identifier escape sequence to the host. This sequence is: ESC / Z.

PRINT CONTROLLER OFF

ESC X

This command sequence will reset PRINT CONTROLLER ON.

PRINT CONTROLLER ON

ESC W

This command sequence turns the printer port on. All data received will be routed to the printer port. The data may or may not be displayed on the screen depending on the PASSTHRU DISPLAY/ONLY selection. (See Section 2.2).

PAGE PRINT

ESC]

This command sequence causes all data displayed on the screen to be sent to the printer port. Trailing spaces on each line will be suppressed. A Carriage Return and Line Feed (CR/LF) will be sent at the end of each line. The terminal will pause for 250 milliseconds at the end of each line. While the screen data is being sent to the printer port, any new data received from the host will back up in the receive buffer FIFO. If XON/XOFF is enabled, XOFF will be sent prior to overflow.

REVERSE LINE FEED

ESC I

This command sequence moves the active cursor position up one position without altering the column position. If the active cursor position is at the top margin, a scroll down is performed; line 24 scrolls off the bottom of the screen and line 1 is blank.

3.5 CONTROL CODE COMMANDS

The SW10 does not respond to all ASCII control commands. Also, the action taken by the SW10 may be different from the normal ASCII function. Figure 3-4 lists the control commands to which the SW10 will respond and the nature of the response.

3.6 SPECIAL COMMANDS

CLEAR SCREEN

<SHIFT><NO SCROLL>

Pressing the <SHIFT> key then the <NO SCROLL> key will erase the entire screen and place the cursor in the HOME position. This command cannot be executed in the SETUP mode.

STATUS LINE ON/OFF

<CONTROL><SETUP>

When not in SETUP mode, simultaneously pressing the <CONTROL> then <SETUP> keys will cause the status line to toggle on and off. The four load indicators will still be displayed if set even though the status line is turned off.

3.7 IGNORED COMMANDS

The following list of DEC commands will be ignored if received:

DECCOLM
DECINLM
DECDHL
DECDWL
DECSWL